

30-039-26477

Energen Resources

Carson National Forest, S36, T32N, R5W

Carracas Mesa

Carracas Canyon Unit 36 A #5

Final Survey

Surface: 1460/W 910/W
BHL 1 1515/W 1186/W Ind 3820 Tvd 36.44
BHL 2 1676/W 1739/W Ind 4346 Tvd 36.60

Plan: Actual Drill Path

Energen Resources - Survey

26 October, 2006

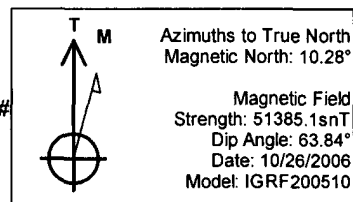
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Project: Carson National Forest
Site: Carracas Mesa
Well: Carracas Canyon Unit 36 A #
Wellbore: Final Survey

Plan: Actual Drill Path (Carracas Canyon Unit 36 A #5/Final Survey)



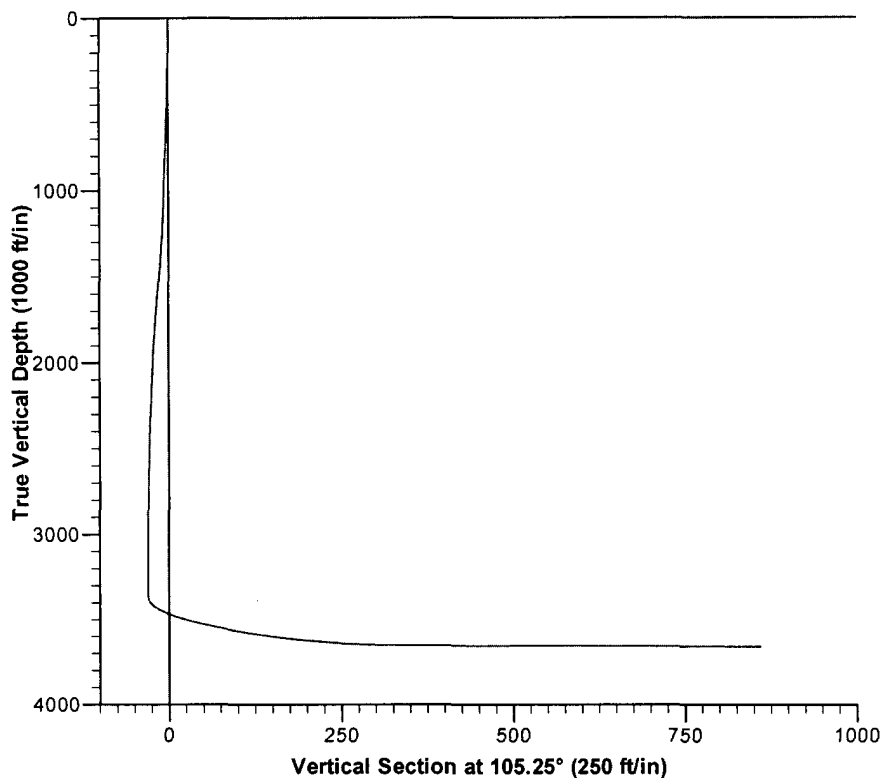
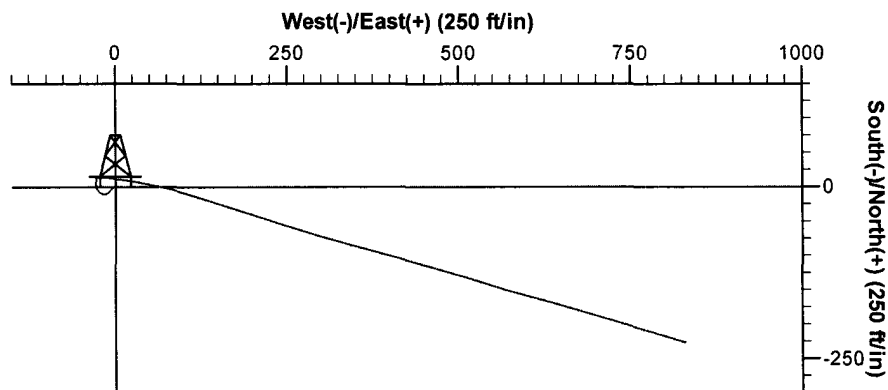
PROJECT DETAILS: Carson National Forest, S36, T32N, R5W

Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: New Mexico Western Zone

System Datum: Mean Sea Level

SURFACE LOCATION

Easting: 2873380.93
Northing: 2162058.04



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Company:	Energen Resources	Local Co-ordinate Reference:	Well Carracas Canyon Unit 36 A #5
Project:	Carson National Forest, S36, T32N, R5W	TVD Reference:	KB @ 6915.0ft (AWS 450)
Site:	Carracas Mesa	MD Reference:	KB @ 6915.0ft (AWS 450)
Well:	Carracas Canyon Unit 36 A #5	North Reference:	True
Wellbore:	Final Survey	Survey Calculation Method:	Minimum Curvature
Design:	Actual Drill Path	Database:	EDM 2003.16 Single User Db

Project	Carson National Forest, S36, T32N, R5W		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Western Zone		

Site	Carracas Mesa				
Site Position:		Northing:	2,162,058.04 ft	Latitude:	36° 56' 25.620 N
From:	Lat/Long	Easting:	2,873,380.93 ft	Longitude:	107° 19' 8.620 W
Position Uncertainty:	0.0 ft	Slot Radius:	"	Grid Convergence:	0.31 °

Well	Carracas Canyon Unit 36 A #5					
Well Position	+N/-S	0.0 ft	Northing:	2,162,058.04 ft	Latitude:	36° 56' 25.620 N
	+E/-W	0.0 ft	Easting:	2,873,380.93 ft	Longitude:	107° 19' 8.620 W
Position Uncertainty		0.0 ft	Wellhead Elevation:	6,902.0 ft	Ground Level:	6,902.0 ft

Wellbore	Final Survey				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	10/26/2006	10.28	63.84	51,385

Design	Actual Drill Path				
Audit Notes:					
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.0	
Vertical Section:	Depth From (TVD)	+N/-S (ft)	+E/-W (ft)	Direction (°)	
	0.0	0.0	0.0	105.25	

Survey Tool Program	Date	10/26/2006			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
0.0	4,396.0	Actual Drill Path (Final Survey)	MWD	MWD - Standard	

Planned Survey							
MD (ft)	TVD (ft)	Inc (°)	Azi (°)	V. Sec (ft)	N/S (ft)	E/W (ft)	
0.0	0.0	0.00	0.00	0.0	0.0	0.0	
100.0	100.0	0.06	6.75	0.0	0.0	0.0	
200.0	200.0	0.11	6.75	0.0	0.2	0.0	
300.0	300.0	0.14	309.23	-0.2	0.4	-0.1	
400.0	400.0	0.24	286.48	-0.5	0.5	-0.4	
500.0	500.0	0.59	238.35	-1.0	0.3	-1.0	
600.0	600.0	1.03	228.16	-1.9	-0.6	-2.1	
700.0	700.0	1.21	230.93	-3.0	-1.8	-3.6	
800.0	799.9	1.40	232.98	-4.4	-3.2	-5.4	
900.0	899.9	1.31	224.66	-5.7	-4.8	-7.2	
1,000.0	999.9	1.25	215.31	-6.6	-6.5	-8.6	
1,100.0	1,099.9	1.09	223.48	-7.4	-8.1	-9.9	

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Site:	Carracas Mesa	MD Reference:	KB @ 6915.0ft (AWS 450)
Well:	Carracas Canyon Unit 36 A #5	North Reference:	True
Wellbore:	Final Survey	Survey Calculation Method:	Minimum Curvature
Design:	Actual Drill Path	Database:	EDM 2003.16 Single User Db

Planned Survey						
MD (ft)	TVD (ft)	Inc (°)	Azi (°)	V. Sec (ft)	N/S (ft)	E/W (ft)
1,200.0	1,199.9	0.96	234.14	-8.4	-9.2	-11.2
1,300.0	1,299.8	0.93	247.64	-9.6	-10.0	-12.6
1,400.0	1,399.8	0.96	261.08	-11.0	-10.5	-14.2
1,500.0	1,499.8	1.20	272.23	-12.8	-10.6	-16.1
1,600.0	1,599.8	1.47	279.50	-15.1	-10.3	-18.4
1,700.0	1,699.8	1.34	295.68	-17.5	-9.6	-20.7
1,800.0	1,799.7	1.34	313.54	-19.7	-8.3	-22.6
1,900.0	1,899.7	1.07	318.94	-21.5	-6.8	-24.1
2,000.0	1,999.7	0.83	327.70	-22.8	-5.5	-25.1
2,100.0	2,099.7	0.89	326.62	-23.9	-4.2	-25.9
2,200.0	2,199.7	0.95	325.68	-25.1	-2.9	-26.8
2,300.0	2,299.6	0.96	339.35	-26.2	-1.4	-27.6
2,400.0	2,399.6	1.02	352.08	-27.1	0.3	-28.0
2,500.0	2,499.6	1.02	357.35	-27.7	2.1	-28.2
2,600.0	2,599.6	1.03	2.59	-28.2	3.8	-28.2
2,700.0	2,699.6	0.97	359.00	-28.6	5.6	-28.1
2,800.0	2,799.6	0.92	354.98	-29.1	7.2	-28.2
2,900.0	2,899.6	0.86	1.39	-29.6	8.8	-28.3
3,000.0	2,999.6	0.81	8.70	-29.9	10.2	-28.2
3,100.0	3,099.5	0.82	9.38	-30.0	11.6	-27.9
3,200.0	3,199.5	0.82	10.04	-30.1	13.1	-27.7
3,300.0	3,299.5	0.25	87.86	-30.0	13.8	-27.3
3,340.0	3,339.5	0.43	136.46	-29.8	13.7	-27.1 Directional Driller Tie In
3,373.0	3,372.5	1.25	98.39	-29.3	13.5	-26.7
3,380.0	3,379.5	3.43	93.14	-29.0	13.5	-26.4
3,390.0	3,389.5	6.56	91.71	-28.2	13.5	-25.6
3,400.0	3,399.4	9.69	91.20	-26.8	13.4	-24.1
3,410.0	3,409.2	12.82	90.94	-24.9	13.4	-22.2
3,414.0	3,413.1	14.07	90.87	-24.0	13.4	-21.3
3,420.0	3,418.9	16.12	91.76	-22.5	13.3	-19.7
3,430.0	3,428.4	19.55	92.84	-19.5	13.2	-16.6
3,440.0	3,437.7	22.99	93.61	-16.0	13.0	-13.0
3,444.0	3,441.4	24.36	93.86	-14.4	12.9	-11.4
3,450.0	3,446.8	26.05	94.87	-11.9	12.7	-8.9
3,460.0	3,455.7	28.87	96.32	-7.4	12.3	-4.3
3,470.0	3,464.3	31.70	97.53	-2.4	11.7	0.7
3,476.0	3,469.4	33.41	98.16	0.8	11.2	3.9
3,500.0	3,488.9	37.64	99.21	14.7	9.1	17.7
3,507.0	3,494.4	38.87	99.48	19.0	8.4	22.0
3,525.0	3,508.0	42.54	100.18	30.7	6.4	33.5
3,538.0	3,517.4	45.20	100.63	39.7	4.8	42.4
3,550.0	3,525.8	46.32	101.28	48.2	3.1	50.8
3,570.0	3,539.3	48.19	102.30	62.9	0.1	65.2
3,602.0	3,560.2	50.47	104.84	87.1	-5.6	88.8

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Planned Survey						
MD (ft)	TVD (ft)	Inc (°)	Azi (°)	V. Sec (ft)	N/S (ft)	E/W (ft)
3,625.0	3,574.3	53.80	106.96	105.3	-10.6	106.3
3,633.0	3,579.0	54.96	107.66	111.8	-12.5	112.5
3,650.0	3,588.3	58.67	107.51	126.0	-16.8	126.0
3,664.0	3,595.2	61.73	107.39	138.2	-20.4	137.6
3,696.0	3,609.7	64.54	107.48	166.7	-29.0	164.9
3,700.0	3,611.4	64.86	107.60	170.3	-30.1	168.3
3,726.0	3,622.0	66.92	108.36	194.0	-37.4	190.9
3,750.0	3,631.0	69.29	108.29	216.2	-44.4	212.0
3,758.0	3,633.7	70.08	108.27	223.7	-46.8	219.1
3,775.0	3,639.1	73.46	108.13	239.8	-51.8	234.5
3,789.0	3,642.7	76.24	108.01	253.3	-56.0	247.3
3,800.0	3,645.2	78.02	107.76	264.0	-59.3	257.5
3,820.0	3,648.8	81.25	107.30	283.7	-65.2	276.3
3,825.0	3,649.5	82.30	107.09	288.6	-66.7	281.0
3,850.0	3,651.7	87.57	106.03	313.5	-73.8	304.9
3,853.0	3,651.8	88.20	105.90	316.5	-74.6	307.8
3,884.0	3,652.4	89.60	105.99	347.5	-83.1	337.6
3,900.0	3,652.6	89.29	105.86	363.5	-87.5	352.9
3,916.0	3,652.8	88.99	105.72	379.5	-91.8	368.3
3,948.0	3,653.9	87.14	104.76	411.5	-100.2	399.2
3,979.0	3,655.6	86.61	105.37	442.5	-108.3	429.1
4,000.0	3,656.3	89.21	105.72	463.4	-113.9	449.3
4,011.0	3,656.4	90.57	105.90	474.4	-116.9	459.9
4,041.0	3,656.1	90.48	106.43	504.4	-125.3	488.7
4,073.0	3,655.8	90.57	107.13	536.4	-134.5	519.3
4,105.0	3,655.5	90.31	107.57	568.4	-144.0	549.9
4,136.0	3,655.7	89.25	105.28	599.4	-152.8	579.6
4,167.0	3,656.2	88.72	105.81	630.4	-161.1	609.5
4,199.0	3,657.0	88.55	106.07	662.4	-169.9	640.2
4,200.0	3,657.0	88.57	106.09	663.4	-170.2	641.2
4,231.0	3,657.6	89.16	106.69	694.4	-178.9	670.9
4,262.0	3,658.3	88.46	106.78	725.3	-187.8	700.6
4,294.0	3,658.9	89.08	106.78	757.3	-197.1	731.2
4,300.0	3,659.0	89.03	106.80	763.3	-198.8	737.0
4,326.0	3,659.5	88.81	106.87	789.3	-206.3	761.9
4,350.0	3,659.7	90.31	106.25	813.3	-213.2	784.9
4,396.0	3,659.5	90.31	106.25	859.3	-226.1	829.0

Checked By: _____ Approved By: _____ Date: _____